

## **REMARKS**

Reconsideration and allowance of the subject matter are respectfully requested.

Claims 1-22 are pending in the application. Applicants respectfully submit that the pending claims define patentable subject matter.

### **I. Claim Objections**

Claims 14, 15 and 20 have been objected to as allegedly lacking antecedent basis. By this Amendment, claims 14, 15 and 20 have been amended to improve clarity. Accordingly, the Examiner is requested to remove the objection.

### **II. Prior Art Rejections**

Claims 1, 2, 4, 9, 10 and 12 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Walker et al. (U.S. Pat. No. 3,952,848; hereinafter "Walker"). Claims 1, 2, 4 and 8-10 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Proud (U.S. Pat. No. 4,018,315; hereinafter "Proud"). Claim 13 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Proud and Keithley (U.S. Pat. No. 560,097; hereinafter "Keithley"). Claim 11 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Proud and Ledingham (U.S. Pat. No. 5,310,047; hereinafter "Ledingham"). Claim 3 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Walker. Claims 15 and 16 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Walker and German reference 1,057,164. Claims 20-22 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Proud and Japanese reference 58-4637. Claim 19 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Proud and McCafferty (U.S. Pat. No. 1,940,873). Claims 5-7 are rejected under 35 U.S.C. § 103(a) as allegedly

being unpatentable over Proud and Watson (U.S. Pat. No. 1,868,619; hereinafter "Watson").

Applicants respectfully submit that the claimed invention would not have been anticipated by Walker or Proud or rendered obvious by Walker and/or Proud, alone, or combination with Keithley, Ledingham, German reference 1,057,164, McCafferty, Japanese reference 58-4637 and/or Watson.

Independent claim 1 is directed to "[a] neutral section for use with an overhead railway conductor line, which neutral section is disposed between the ends of said conductor line when in use." Independent claim 1 recites:

an insulator having a single, integral body to isolate the ends of said conductor line from each other;

wherein the profile of the neutral section is designed such that, when the neutral section is in use, its neutral axis is aligned closely with the neutral axis of the conductors on its either side and

the height of said insulator is chosen so that the stiffness and the dynamic mass of the neutral section closely match those of the conductors on its either side in both the vertical and horizontal planes.

The Office Action indicates that both Walker and Proud disclose all of the features of claim 1. Applicants respectfully disagree.

Applicants respectfully submit that Walker discloses a neutral section comprising a resin-bonded glass rod 1 embedded in a body 2 that is vacuum-cast from a synthetic resin of specialized composition. The insulator is attached to conductors on its either side by metal end fittings 3 that are compression-jointed onto the ends of the rod 1 (see the discussion spanning lines 47 to 54 in col. 3 of Walker in conjunction with Figures 2, 3, and 7 to 9).

Further, the insulator of Walker comprises two parts: (i) an inner body (the glass rod 1, bar 8) and an outer body (the specialized synthetic resin body 2). In contrast, the Applicants' claim 1 is directed to an insulator with a single, integral body, which feature has not been disclosed anywhere in Walker. Thus, it can be appreciated that, unlike Walker, the Applicants' claimed insulator can be made with fewer fabrication steps, without requiring different specialized materials (Walker relies on the outer specialized resin covering for appropriate resistance to tracking and abrasion — see col. 1, lines 40 to 45) and in an efficient manner.

Although it has been alleged that the features of the claimed invention relating to: (1) the alignment of the neutral axis of the neutral section with the axes of the conductors on its either side; and (2) choosing the height of the insulator so that the stiffness and dynamic mass of the neutral section closely matches those of the conductors on its either side in both the vertical and horizontal planes, are known from Walker, this is not the case. It should be noted that these reasons are provided by referring to the embodiments shown in Figures 4 to 9 in Walker since they are closer in profile (elongated in the vertical plane) to the claimed invention than those shown in Figures 2 and 3. As recently held by the Federal Circuit in Net MoneyIn v. Verisign (Fed. Cir. Oct. 20, 2008), it is insufficient for a reference to anticipate a claimed invention if the reference does not teach “all of the limitations arranged or combined in the same way as recited in the claim.”

**1. Alignment of Neutral Axis**

From the discussion in col. 4, lines 25 to 31, that has been given in conjunction with Figures 6 to 9, it is noted that alignment of the neutral axis of the device of Walker is

achieved via holes 9 that are drilled in the bar 8. The holes are positioned so that they are aligned with the neutral axis of an adjacent conductor.

In contrast, the neutral axis of the Applicants' neutral section is aligned with the neutral axes of conductors on its either side simply due to its profile design (i.e. the neutral section is designed so that its neutral axis is as low as possible and lies only a few millimeters above the neutral axes of adjacent conductors — see page 4, lines 16 to 21). This feature has not been disclosed anywhere in Walker either with respect to an insulator with a single, integral body (as is the case in the claimed invention) or even one with multiple body parts (as in Walker).

From the discussion above, it is clear that alignment of the neutral axes of the neutral section and adjacent conductors in Walker is done in a manner that is tedious, time-consuming and expensive since the holes have to be drilled for each insulator and accurately positioned so as to reduce the possibility of misalignment. The latter would require measurement of where the neutral axes of the conductor lines lie onsite (i.e. when in use) and then using these measurements in the manufacturing plant to drill the holes. Clearly, there is much room for error in these steps and so it is questionable whether the neutral axes of the neutral section and adjacent conductors would indeed be accurately aligned when the device of Walker is installed and put to use.

The Applicants' neutral section as recited in claim 1 overcomes the above problems since it relies only on the profile of the neutral section to achieve the same purpose, which makes it simpler, cheaper and more accurate than the device of Walker.

**2. Matching of the stiffness and dynamic mass of the insulator with those of the adjacent conductors**

**A. Stiffness matching**

From the discussion from line 64 of col. 3 to line 4 of col. 4, that has been given in conjunction with Figure 4, it is noted that the stiffness of the neutral section of Walker is made to be similar with that of the conductors on its either side by gluing a web 5 to the rod

2. Notably, the stiffness characteristics of the rod 2 (which is “very flexible” — see col. 3, lines 64 and 65) are reinforced with those of the web 5 (which is made of resin-bonded fibre-glass) for the stiffness matching.

By contrast, in the claimed invention, the stiffness matching is achieved by increasing the height of the insulator (see page 4, lines 21 to 23), which feature has not been disclosed anywhere in Walker with respect to an insulator with a single, integral body (as is the case in the claimed invention).

From the above discussion, it is clear that stiffness matching in Walker necessarily involves extra fabrication steps in the production of the insulator than what is required in the claimed invention. Furthermore, since the web 5 is glued onto the rod 1, this would result in a device of inferior structural integrity than the claimed invention.

**B. Matching of dynamic mass**

Although it has been stated at col. 1, lines 8 to 13, that, amongst other features, the mass per unit length of the neutral section is chosen to be nearly identical to adjacent conductors, there is no disclosure in Walker as a whole as to how precisely this is achieved. Furthermore, unlike the claimed invention, there is no disclosure in Walker of a neutral

section made up of an insulator with a single, integral body whose mass is matched with those of conductors on its either side by increasing the height of the insulator.

In fact, from Figures 4 and 5 in Walker, it is clear that the mass of the neutral section in Walker is a sum of the respective masses of the rod 1, the web 5 and the outer resin body 2. Since these components are made of resin, it is unlikely that their total mass would match that of a conductor (usually copper) on either side of the neutral section when it is in use. In the light of the points discussed above, claim 1 is both novel and unobvious over Walker.

Similarly, Proud does not have a single integral body, nor is there any disclosure or suggestion therein that the neutral axis of the insulator is aligned with the neutral axes of conductors on its either side simply due to its profile design and its stiffness and dynamic mass is matched with those of conductors on its either side by increasing the height of the insulator.

Likewise, Keithley, Ledingham, German reference 1,057,164, McCafferty, Japanese reference 58-4637 or Watson do not teach or suggest the features of claim 1 which are missing from Walker and Proud.

Dependent claims 2-22 are patentable over the cited prior art by virtue of their dependency on independent claim 1. Thus, dependent claims 2-22 are patentable for at least the above-mentioned reasons of claim 1.

Accordingly, Applicants respectfully submit that amended independent claim 1, as well as dependent claims 2-22, should be allowable because the cited references do not teach or suggest all of the features of the claimed invention and one of ordinary skill in the art would not have been motivated to combine the cited references to produce the claimed invention.

In view of the above remarks, Applicants believe that the pending application is in condition for allowance. Accordingly, the Examiner is respectfully requested to expedite this application to issue. If there is any matter that the Examiner would like to discuss, the Examiner is invited to contact the undersigned representative at the telephone number set forth below.

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Respectfully submitted,

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